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Indian Standard
SPECIFICATION FOR DYED COTTON FABRIC, WATER REPELLENT, FOR CAPES AND RAIN COATS
(Second Revision)

First Reprint MARCH 2001

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 3 *October* 1985

AMENDMENT NO. 1 AUGUST 1995
TO
IS 2422 : 1985 SPECIFICATION FOR DYED COTTON FABRIC, WATER REPELLENT FOR CAPES AND RAIN COATS

(Second Revision)

(*Page* 3, *clause* **1.1**) — Substitute the following for the existing clause:

'**1.1** This standard prescribes constructional details and other particulars of three varieties of the cotton fabrics, water repellent for capes and rain coats. If agreed, man-made fibres may be blended with cotton.'

(*Page* 5, *Table* 1) — Substitute the following for the existing table:

TABLE 1 CONSTRUCTIONAL PARTICULARS OF COTTON FABRICS, WATER REPELLENT

(*Clause* 3.1)

Variety No.	Approximate Linear Density of Yarn, Tex (Cotton Count)		Ends/dm	Picks/dm	Mass		Breaking Load on 50 × 20 cm Strips, N (kgf), *Min*		Length m	Width
	Warp	Weft			Dyed Fabric	Scoured/ Bleached Fabric	Warp	Weft		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	42 tex × 2 (14s/2)	42 tex × 2 (14s/2)	240	180	375	355	1 000 (102)	900 (92)	36 or as agreed	75 or as agreed
2	16·4 tex × 2	19·7 tex × 2	510	300	310	290	2 310	1 695	do	91 or as agreed
3	9·8 tex × 2	13·4 tex × 2	670	350	235	220	2 230	1 515	do	do
Tolerance, percent	—	—	± 5	± 5	+ 5 − 2.5	+ 5 − 2·5	—	—	—	± 2
Method of Test	—	—	IS 1963 : 1981*		IS 1964 : 1970†		IS 1969 : 1985‡		IS 1954 : 1990§	

* Methods for determination of threads per unit length in woven fabrics (*second revision*).

† Methods for determination of weight per square metre and weight per linear metre of fabrics (*first revision*).

‡ Methods for determination of breaking load and elongation of woven textile fabrics (*second revision*).

§ Methods for determination of length and width of fabrics (*second revision*).

[*Page* 6, *Table* 2, *against Sl No.* (iii), *col* 3] — Substitute '4 percent' *for* '2·5 percent'.

(TX 02)

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AMENDMENT NO. 2 NOVEMBER 1995
TO
IS 2422 : 1985 SPECIFICATION FOR DYED COTTON FABRIC, WATER REPELLENT FOR CAPES AND RAIN COATS

(Second Revision)

(*Cover page, pages* 1 *and* 3, *Title*) — Delete the words 'DYED COTTON'.

(*Page* 3, *clause* 1.1, *line* 2) — Delete the words 'dyed cotton'.

(*Page* 6, *Table* 2, *Heading*) — Delete the words 'DYED COTTON'.

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(Second Revision)

(*Page* 4, *clause* **2.2.2**) — Substitute the following for the existing:

'The treated and dyed cloth shall be given rot-proofing treatment with Copper or zinc napthenate as specified in IS 11662*.'

(*Page* 4) — Insert the following foot note at the end:

'*Specification for preservative treatments of textiles.'

[*Page* 7, *Table* 2, *Sl No.* (vii)(a)] — Delete and renumber the remaining.

(*Page* 7 *Table* 2, *footnote marked* †) — Delete.

[*Page* 7, *Table* 2, *Sl No.* (vii)(b) & (c), *col* 5] — Substitute 'IS 3522 (Part 1) : 1989‡' *for* '—'.

(*Page* 7, *Table* 2) — Insert the following footnote at the end:

‡Methods for estimation of common preservatives on textiles.

[*Page* 7, *Table* 2, *Sl No.* (vii)(b) & (c), *col* 4] — Delete.

(*Page* 9, *clauses* **A-3** *and* **A-3.1**) – Delete.

(TX 31)

Reprography Unit, BIS, New Delhi, India

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SPECIFICATION FOR DYED COTTON FABRIC, WATER REPELLENT, FOR CAPES AND RAIN COATS
(Second Revision)

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(*Continued on page* 10)

Indian Standard

SPECIFICATION FOR DYED COTTON FABRIC, WATER REPELLENT, FOR CAPES AND RAIN COATS

(Second Revision)

0. FOREWORD

0.1 This Indian Standard (Second Revision) was adopted by the Indian Standards Institution on 15 March 1985, after the draft finalized by the Cotton and Cotton Products Sectional Committee had been approved by the Textile Division Council.

0.2 This standard was originally published in 1963 and subsequently revised in 1979. This second revision has been taken up to make it up-to-date on the basis of experience gained during its use. The revised standard includes Bundesmann test for water resistance in place of hydrostatic pressure head test. The previous title of the standard ('Specification for dyed cotton fabric, water proofed') has also been changed to 'Specification for dyed cotton fabric, water repellent, for capes and rain coats' since the cloth is required to be air permeable.

0.3 Considerable assistance has been derived in the preparation of the original standard from IND/TC 119 'Fabric, cotton, olive green water repellent for capes, waterproofed', issued by the Ministry of Defence, Government of India.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes constructional details and other particulars of the dyed cotton fabric, water repellent for capes and rain coats. If agreed, man-made fibres may be blended with cotton.

---

*Rules for rounding off numerical values (*revised*).

1.2 This standard does not specify general appearance, feel, shade, etc, of the cloth (*see also* **3.3**).

2. MANUFACTURE

2.1 Yarn — The cotton yarn used in the manufacture of the cloth shall be satisfactory in evenness and reasonably free from neps and spinning defects.

2.2 Cloth — The cloth shall be free from dressing and filling materials and from substances liable to cause subsequent tendering. The dyed cloth shall be free from stains, streaks, patches and specks.

2.2.1 The water repellent treatment should be imparted by treating the cloth with a suitable composition. The treated cloth should be free from streakiness and objectionable flaws. The water repellent mixture shall not contain any ingredient which is liable to damage the treated cloth.

2.2.2 The treated cloth dyed mineral khaki or olive green on mineral khaki base may not be imparted with rot-proofing treatment. The treated cloth dyed with other class of dyes than mineral khaki shall be given rot-proofing treatment with copper or zinc napthenate (*see* Note).

NOTE — Other rot proofing agents may also be used, if agreed to between the buyer and the seller.

2.2.3 The cloth when visually examined shall be reasonably free from spinning, weaving and processing defects.

3. REQUIREMENTS

3.1 The constructional particulars of the cloth shall conform to those given in Table 1, except the count of warp and weft yarn which has been given for guidance only.

3.2 The colour fastness ratings and other requirements of the cloth shall conform to those given in Table 2.

3.3 Sealed Sample — If, in order to illustrate or specify the indeterminable characteristics, such as general appearance, lustre, feel and shade of the cloth, a sample has been agreed upon and sealed, the supply shall be in conformity with the sample in such respects.

3.3.1 The custody of the sealed sample shall be a matter of prior agreement between the buyer and the seller.

TABLE 1 CONSTRUCTIONAL PARTICULARS OF DYED COTTON FABRIC, WATER REPELLENT

(*Clause* 3.1)

	APPROXIMATE COUNT OF YARN COTTON COUNT (TEX)		ENDS/ cm	PICKS/ cm	MASS	BREAKING LOAD ON 5·0 × 20 cm STRIPS, *Min*		LENGTH	WIDTH	WEAVE
	Warp	Weft				Warp	Weft			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
					g/m²	N (kg)	N (kg)	m	cm	
	$14^s/2$ (42 tex × 2)	$14^s/2$ (42 tex × 2)	24	18	375	1 000 (102)	900 (92)	36 or above as agreed	75 or as agreed	Plain
TOLERANCE, PERCENT	—	—	± 5	± 5	+ 5 − 2·5	—	—	—	± 2	—
METHOD OF TEST	—	—	IS : 1963-1981*		IS : 1964-1970†	IS : 1969-1985‡		IS : 1954-1969§		Visual

*Methods for determination of threads per unit length in woven fabrics (*second revision*).

†Methods for determination of weight per square metre and weight per linear metre of fabrics (*first revision*).

‡Methods for determination of breaking load and elongation of woven textile fabrics (*second revision*).

§Methods for determination of length and width of fabrics (*first revision*).

TABLE 2 REQUIREMENTS OF DYED COTTON CLOTH WATER REPELLENT

(*Clause* 3.2)

Sl No.	Characteristics	Requirement	Method of Test, Ref to	
			Appendix	Indian Standard
(1)	(2)	(3)	(4)	(5)
i)	Colour fastness to:			
	a) Light	5 or better	—	IS : 2454-1967* IS : 686-1957†
	b) Washing: Test 4		—	IS : 765-1979‡
	1) Change in colour	4 or better		
	2) Staining of adjacent fabrics	4 or better		
ii)	*p*H value	5·5 to 10	—	IS : 1390-1984§
iii)	Shrinkage or elongation, *Max*	2·5 percent	—	IS : 2977-1964‖
iv)	Blend composition (for blended fabrics)	As agreed ± 3 percent	—	Relevent Indian Standard
v)	Water repellent content, *Max*	8 percent, *Max*	A-2	—
vi)	Water resistance:			
	a) Bundesmann test:		—	IS : 392-1975¶
	1) Percentage absorption of water, *Max*	60 percent		
	2) Water penetration, *Max* (wetting of underside permissible)	1 ml		

*Method for determination of colour fastness of textile materials to artificial light (xenon lamp).

†Method for determination of colour fastness of textile materials to daylight.

‡Method for determination of colour fastness of textile materials to washing: Test 4 (*second revision*).

§Method for determination of *p*H value of aqueous extracts of textile materials (*first revision*).

‖Method for determination of dimensional changes of woven fabrics (other than wool) on soaking in water.

¶Method for determining water absorption and penetration of fabrics using Bundesmann type apparatus (*second revision*).

(*Continued*)

TABLE 2 REQUIREMENTS OF DYED COTTON CLOTH WATER REPELLENT — *Contd*

SL No.	CHARACTERISTICS	REQUIREMENT	METHOD OF TEST, REF TO	
			Appendix	Indian Standard
(1)	(2)	(3)	(4)	(5)
	b) Cone test:			
	1) Amount of penetration	No leakage	—	IS : 7941-1976*
	2) Amount of wetting of outer surface	No wetting (sweating inside the folds permissible)		
vii)	Rot-proofing agent, percent:		A-3	—
	a) Chromium content, *Min* (for mineral khaki and olive green)	3 percent		IS : 4655-1968†
	b) Copper content, percent	0·5 to 0·8	A-3	—
	c) Zinc content, percent	0·8 to 1	A-3	—

*Methods for determining water repellancy of fabrics for cone test.

†Method for determination of iron and chromium in textiles.

4. MARKING

4.1 The cloth shall be marked with the following:

a) Name of the material;
b) Blend composition in descending order (in case of blend fabric);
c) Length and width of the piece;
d) Manufacturer's name, initials or trade-mark, if any; and
e) Year of manufacture.

4.1.1 The product may also be marked with Standard mark.

4.1.1.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

4.2 At the other end of the piece, the cloth shall be marked with an identification mark.

5. PACKING

5.1 The cloth shall be packed in bales or cases in conformity with the procedure laid down in IS : 1347-1972* or in IS : 293-1980† as required.

6. SAMPLING

6.1 The scale of sampling and criteria for conformity as given in IS : 3919-1966‡ shall be followed in respect of the physical characteristics, namely, ends and picks, mass, breaking load, lengh and width of cloth.

6.2 The scale of sampling and criteria for conformity as given in IS : 5463-1969§ shall be followed in respect of colour fastness, *p*H value, shrinkage or elongation, proofing content, water resistance of cloth and blend composition (in case of blended fabrics).

APPENDIX A

(*Table* 2)

METHODS OF TEST

A-1. ATMOSPHERIC CONDITIONS FOR CONDITIONING AND TESTING

A-1.1 The test specimens shall be conditioned to moisture equilibrium in a standard atmosphere of 65 ± 2 percent relative humidity and a temperature of 27 ± 2°C in accordance with IS : 6359-1971||.

A-2. DETERMINATION OF WATER REPELLENT CONTENT

A-2.1 Procedure — Cut four pieces of the material of 75 × 75 mm approximately from different places in the test sample and condition them for 24 hours under standard atmospheric conditions. Weigh the conditioned pieces accurately and subject them to successive extractions in a Soxhlet apparatus with : (a) carbon tetrachloride (*see* IS : 718-1977¶) for 3 hours, (b) rectified spirit (*see* IS : 323-1969**) for 2 hours, and (c) water for 2 hours. After the treatment the material may contain pigments in the interstices of the fabric. To remove these,

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*Specification for inland packaging of cotton cloth and yarn (*first revision*).

†Specification for seaworthy packaging of cotton cloth and yarn (*third revision*).

‡Method for sampling cotton fabrics for determination of physical characteristics.

§Method for sampling of cotton fabrics for chemical tests.

||Method for conditioning of textiles.

¶Specification for carbon tetrachloride (*second revision*).

**Specification for rectified spirit (*revised*).

separate individual threads from the pieces, collect together and give light treatment with soap. Wash the threads thoroughly with water to remove last traces of soap. Dry and condition the test specimen in standard atmosphere.

NOTE — Other solvents may be used in case the water repellent material is not extracted by solvents (carbon tetrachloride and rectified spirit).

A-2.2 Calculation — Calculate the percentage of water repellent content by the following formula:

$$P = \frac{a - b}{b} \times 100$$

where

P = water repellent content, percent;

a = initial mass in grams of the test specimens; and

b = mass in grams of the test specimens after removal of water repellent chemicals.

A-2.3 Repeat the process with other test specimens and calculate the average water repellent content.

A-3. DETERMINATION OF COPPER AND ZINC CONTENT

A-3.1 Procedure — Weigh accurately about 5 g of the test specimen and extract thoroughly with benzene in a Soxhlet apparatus. Transfer the extract to a silica dish and evaporate by heating the dish on a water-bath. Estimate copper and zinc content in the extracted residue after removing the solvent (benzene) and ashing the residue by applying gentle heat and then following procedure given in IS : 1039-1956*.

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*Methods for estimation of small quantities of copper, iron, manganese, chromium and zinc in proofed cotton fabrics.

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